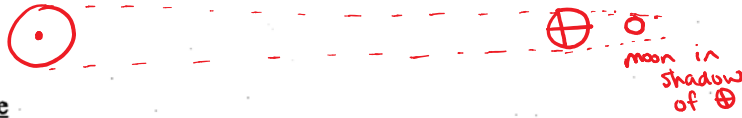


Notes: Finish Fill in The Blank

Eclipses

Lunar Eclipse

- when the shadow of the Earth covers the moon
- can only happen near the full moon phase
- happens twice a year
- entire night side of Earth sees it, so we see them more often than a solar eclipse



Solar Eclipse

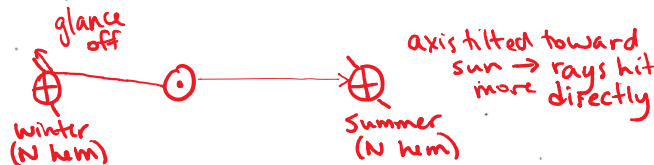
- when the moon blocks the sun from our view
- can only happen near the new moon phase
- happens 2 to 5 times a year
- small shadow, one spot on Earth will only see a full solar eclipse once every 300 years



What happens to stars in the sky as a result of our

rotation (on axis)? - disappear from view temporarily, night turns to day, too light

revolution (around the sun)? - see different stars (different ones on each side of sun), the dipper, etc. are always there because they are more above the solar system rather than beside



Seasons

- due to the tilt of axis, sun hits more directly (and revolution around sun)
- we are actually closer to the sun during the Northern Hemisphere's winter

Length of Day Changes

- longer when the sun is hitting more directly, the day side stays out of the shadow longer

Tides

- the moon's gravity (and sun's) cause the tides on Earth
- high tide occurs when the moon is directly above the location of high tide
- gravity of moon (and sun) pulls on the water closest to the moon most, then some on the Earth and less on the water on the other side (leaving a bulge of water left behind)



- highest high tide occurs when the moon and sun are lined up
- lowest high tide occurs when the moon and sun are at right angles



- lowest high tide occurs when the moon and sun are in opposition



Foucault's Pendulum

- is evidence for the rotation of the Earth (rather than everything orbiting around us)
- a heavy mass on a string has "inertia" (the resistance to change in motion). So, once a pendulum starts swinging it wants to keep going in the same direction. If we let it go for several hours it appears that the pendulum is swinging in a different direction though! How? The pendulum hasn't changed direction! Therefore the Earth must have rotated underneath it. In 24 hours the pendulum will be swinging back in the same direction (the Earth will have completed one rotation on its axis.)

- other evidence for the fact that the Earth rotates is that all the stars, sun, moon, etc., rise in the east and set in the west at the same rate as each other every day.

How to Determine Earth's

volume - from dimensions and formula $V = \frac{4}{3}\pi r^3$ for a sphere

density = $\frac{m}{v}$, calculate the mass from the interaction we see of the gravity between Earth and other bodies (sun, moon, masses on Earth, even you!)

shape = oblate sphere not flat -- evidence: 1) sail of a ship appears before the ship itself, 2) Circular shadow on moon during lunar eclipse (no matter which edge of Earth is casting the shadow).

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